PAVING, CLEANSING, AND DRAINAGE.

A public meeting of an association for the promotion of improved paving, cleansing, and drainage, was held on the 3rd inst. at the Hanover-square rooms, with the view of enforcing upon the public the fact, that if the streets, courts, and alleys of towns throughout the United Kingdom were properly swept and kept clean, not only would the accumulation of mud and dust be entirely prevented at a trifling expense, but employment could be given to 40,000 labourers. There were upwards of 500 persons present, including a number of ladies. On the platform amongst others were the Duke of Grafton (who presided in the unavoidable absence of the Duke of Cambridge), the Earl of Charlemont, Lord Ranelagh, M.P., Sir Burgess Cartac, P. Borthwick, Esq., M.P., C. Cochrane, Esq., the President and Founder of the Association, B. B. Cabbell, Esq., &c.

Mr. Cochrane, in detailing the objects of the association, divided his remarks into three distinct propositions, undertaking to prove, first, that the streets could be kept so clean, as to prevent the accumulation of any mud or dust; secondly, that by keeping the streets so clean, they might secure the employment of 40,000 of the able-bodied poor; and thirdly, that the public would be reconciled to pay any extra expense entailed by raising rates through the parochial authorities towards the accomplishment of these ends. (Cheers.) In proof of the first proposition, he referred to the experiments which were made last winter in Oxford-street and Regent-street, when those streets were kept so clean, that a lady's shoe would not be soiled in crossing at any part of them, whilst some of the adjoining streets were little better than quagmires. With regard to the second proposition, he stated that most accurate calculations had been entered into, which were open to the inspection of any one who wished to examine them, and from which it appeared that each man could keep an area of from 1,500 to 2,000 square yards perfectly clean. Upon that calculation, about 330 men would be required for the city of London, 80 for St. James's parish, 140 for St. George's, from 500 to 600 for St. Marylebone, and so on, giving throughout the whole country employment to at least 40,000 persons. (Cheers.) With regard to the third proposition, as to the expense, it had been calculated that in the city of London the expense entailed upon every housekeeper would be about 7s. per house per year, in addition to what was already paid; or, upon individuals, the expense would be from 1d. to 1½d. per head per month. Mr. Cochrane concluded by moving a resolution to the effect that it is essential to the community at large, in a sanatory, moral, and social point of view, that the greatest possible cleanliness should be maintained in the public thoroughfares.

Mr. P. Borthwick, M.P., moved a resolution to the effect that the improved system of cleansing the public thoroughfares, while it would relieve parochial burdens by securing employment for the poor, who were compelled for want of work to ask for parochial relief, would also tend to the more perfect preservation of buildings and monuments, the improvement of the morals and health of the people, and would also effect a diminution in the losses to householders in furniture, goods, &c.

These resolutions, together with others of secondary importance, being carried unanimously, and thanks having been awarded to the noble chairman for his kindness in presiding and for his conduct in the chair, the meeting was dissolved.

News for Church Building Committees.—An advertisement has lately appeared in one or two of the daily papers, stating that "A sum of money has been appointed by the will of a gentleman lately deceased, to be given (on certain conditions) in aid of the funds for building twelve new churches;" and informing parties wishing to put themselves in communication with the trustees how they can do so. The regulations of the stamp office do not allow us to publish the address of the party who advertises, but for the benefit of those who are interested in the bequest, the advertisement itself can be seen on applying to our publisher.

THE STRENGTH OF STONE COLUMNS.

Last week we mentioned a paper on this subject read by Mr. E. Hodgkinson, at the late meeting of the British Association for the Advancement of Science (p. 316). Our contemporary, the *Athenæum*, gives the following additional notes:—

"*On the Strength of Stone Columns*, by Mr. E. Hodgkinson.—The columns were of different heights, varying from 1 inch to 40 inches; they were square uniform prisms, the sides of the bases of which were 1 inch and 1¼ inch, and the crushing weight was applied in the direction of the strata. From the experiments on the two series of pillars it appears that there is a falling off in strength in all columns from the shortest to the longest; but that the diminution is so small, when the height of the column is not greater than about 12 times the side of its square, that the strength may be considered as uniform, the mean being 10,000 lb. per square inch, or upwards. From the experiments on the columns one inch square, it appears that when the height is 15 times the side of the square the strength is slightly reduced; when the height is 24 times the base, the falling off is from 138 to 96 nearly; when it is 30 times the base, the strength is reduced from 138 to 75; and when it is 40 times the base, the strength is reduced to 52, or to little more than one-third. These numbers will be modified to some extent by the experiments in progress. In all columns shorter than 30 times the size of the square, fracture took place by one of the ends failing; shewing the ends to be the weakest parts; and the increased weakness of the longer columns over that of the shorter ones seemed to arise from the former being deflected more than the latter, and therefore exposing a smaller part of the ends to the crushing force. The cause of failure is the tendency of rigid materials to form wedges with sharp ends, these wedges splitting the body up in a manner which is always pretty nearly the same; some attempts to explain this matter theoretically were made by Coulomb. As long columns always give way first at the ends—shewing that part to be the weakest—we might economize the material by making the areas of the ends larger than that of the middle, increasing the strength from the middle both ways towards the ends. If the area of the ends be the area in the middle as the strength of a short column is to that of a long one, we should have for a column whose height was 24 times the breadth, the area of the ends and middle as 13·766 to 9·595 nearly. This, however, would make the ends somewhat too strong; since the weakness of long columns arises from their flexure, and increasing the ends would diminish that flexure. Another mode of increasing the strength of the ends would be that of preventing flexure by increasing the dimensions of the middle. From the experiments it would appear that the Grecian columns, which seldom had their lengths more than about ten times the diameter, were nearly of the form capable of bearing the greatest weight when their shafts were uniform; and that columns tapering from the bottom to the top were only capable of bearing weights due to the smallest part of their section, though the larger end might serve to prevent lateral thrusts. This last remark applies, too, to the Egyptian columns, the strength of the column being only that of the smallest part of the section. From the two series of experiments, it appeared that the strength of a short column is nearly in proportion to the area of the section, though the strength of the larger one is somewhat less than in that proportion.

Prof. Challis inquired whether Mr Hodgkinson had found the columns to give way chiefly in the direction of the cleavages of the stone? Mr. Hodgkinson replied that he had; and that hence the same size and shape of stone cut out of the same block, required very different forces to crush them across the grain from what they did with it. Prof. Stevelly said, that it was one peculiarity of Mr. Hodgkinson's researches, that they opened up so many collateral objects of interest and wide fields of inquiry. It was easy to see that the present researches might become important to the geologist, by leading him to the source from which originated the splittiog up of extended rocks into beds and strata, and the contortions of them; for example, to some volcanic matter forced up vertically in such a manner as to exercise a crushing force upon even distant masses.—Prof. Willis shewed, by examples deduced from various styles of architecture, that the ancients must have been practically in possession of similar principles; and from several examples which he gave, it would appear that columns of a shape suited to these principles were again coming into use.

CHURCH OF THE HOLY TRINITY, BARNSTAPLE, DEVON.

This church, which was consecrated by the Bishop of Exeter on the 21st ult., is built in the style of the fifteenth century; the plan is cruciform and consists of a nave (without aisles) and transepts, a spacious choir and aisles. The tower, which is at the south west angle of the building, is to be surmounted with a spire. The exterior walls are faced with a sort of sand-stone obtained in the neighbourhood; the dressings and windows are of Bath-stone.

The large west window is a copy of the beautiful window at St. Mary's, Oxford. On entering the church, the choir, which is raised several steps above the nave, is seen through three lancet arches which divide it from the nave; and the view is terminated by the eastern window of three lights filled in with stained glass, manufactered at Exeter by Mr. Bere. The arches and clustered columns between the nave and choir, are of Bath-stone; the two lateral arches being much narrower than the centre one; a low open panelled screen of oak between the piers of the arches divide the nave and chancel; the transepts which are lighted by windows of three lights, are divided from the nave by arches of stone springing from corbels; the nave is lighted on either side by four windows each of two lights; the mullions, tracery, and jambs, are of Bath-stone; the open timber-framed hammer beam roof, forms a principal feature on entering the church; the pulpit, reading-desk, and font, are all sculptured of Caen-stone by Mr. Rowe, of Exeter; the pulpit, and reading-desk, which are uniform, are placed at the easternmost angle formed by the junction of the nave and transepts, the pulpit being on the north side.

The pews are constructed of American oak; the framing is low, somewhat similar in construction to many of the old oak seats in the neighbouring churches, with the exception that they have a low door to each seat or pew, somewhat similar to St. Katherine's Church, Regent's Park; the pews will seat above 800 persons, out of which number 326 sittings are to be free for ever; there is a small gallery at the western end of the church, capable of holding 150 persons; the front is of oak panelled; the internal length of nave, 77 feet by 34 feet 10 inches; chancel, 27 feet by 16 feet; chancel aisles, 35 feet by 11 feet 6 inches; transepts, 16 feet by 14; height from floor to springing of roof 27 feet; to centre of roof, 56 feet; the east window is 15 feet high by 7 feet wide in three compartments; the four top compartments of the tracery represent the emblems of the four Evangelists; the remainder of the window is filled with stained and ornamental glass; the tower when completed will rise 100 feet with a spire on the top 56 feet high; there is ample room in the bell-chamber for eight bells; the lancet-windows in the north and south chancel aisles are also fitted with ornamental glass, that in the south has the emblems of the Alpha and Omega; that in the north, represents the three nails and a crown of thorns encircling "J. N. R. J.;" it is proposed to fill the west window with stained glass with emblematic representations of the twelve apostles, at a cost of about 200 guineas.

The font stands in the aisle near the western entrance, and has on the rim, in old English characters—"In the name of the Father, and of the Son, and of the Holy Ghost." An organ is in course of erection for the church by Houlditch of Soho, and will be completed within six months. The nomination of the minister is in the hands of the Rev. John James Scott (at whose sole expense this church was built and endowed), his heirs and assigns for ever.

The church is capable of holding 1,200 persons, and built at a cost of nearly 8,000*l.* when completed. The architects are Mr. G. Abbott, of Barnstaple, and Mr. D. Mackintosh, of Exeter.

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